A CRITICAL ANALYSIS OF COMPUTER EDUCATION IN PRE-SERVICE SECONDARY TEACHER TRAINING PROGRAMME

A
SYNOPSIS

SUBMITTED TO THE HIMACHAL PRADESH UNIVERSITY, SHIMLA FOR THE DEGREE OF

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Supervisor

Dr. VISHAL SOOD
Assistant Professor (Education)

Investigator

REENA

DEPARTMENT OF EDUCATION
HIMACHAL PRADESH UNIVERSITY,
SUMMER HILL, SHIMLA-171005

The Title

A Critical Analysis of Computer Education in Pre-Service Secondary Teacher Training Programme

We are living in a highly complex and rapidly changing world. With the advancement in Science and Technology, there is a growing and welcome realization amongst the developing countries that education is a potential means of development that does not deal with present only but also with future. It is an attempt on the part of adult members of the society to shape the development of coming generation in accordance with its own ideas of life. It is an "*effort to secure for everyone the conditions under which individuality is most completely developed.*" Education in its general sense is a form in which knowledge, skills and habits of a group of people are transferred from one generation to the next through teaching, training and research. Generally, it occurs through any experience that has a formative effect on the way one thinks, feels, or acts. It is considered as a unique and great investment in human capital for the present and future. It is an important factor for the progress and all round development of a nation. It plays a vital and crucial role in economic and social development and national integration of the country. It is considered as a necessity in the present age of science and technology. It is conceived as a powerful agency, which is instrumental in bringing about the desired changes in the social and cultural life of a nation.

The whole process of education is shaped and moulded by the human personality called teacher, who plays a pivotal role in any stream of education. The preparation of such an important functionary must conceivably get the highest priority. Teachers are expected to use the best practice and strategies to meet challenge demands of their career. If the teachers are well trained and highly motivated, learning will be enhanced.

Education of teachers is not only responsible for improvement of school education but also for preparing competent, committed, accountable and efficient teachers who can meet the demands of the system. As such, the importance of teacher education is to help teachers internalize new concepts, attitudes and skills. All the more, we should reasonably look towards teacher training institutions for the emergence of effective prospective teachers.

TEACHER EDUCATION

In a globalized, competitive world the cutting edge to the progress of a Nation can be provided only through its classrooms. After all, education is a planned endeavor. Today no nation can afford to neglect the education of its citizens. Logically enough one has therefore to pay good deal of attention to the preparation of teachers- the dominant players in the classrooms.

Teacher education refers to the policies and procedures designed to equip prospective teachers with the knowledge, attitudes, behaviours and skills they require to perform their tasks effectively in the classrooms, school and wider community. It is a life-long professional development process beginning with initial teacher preparation and continuing throughout teachers' careers. The life-long approach to professional development of teachers recognizes that while the beginning teachers need a solid grounding in the content areas, an understanding of teaching-learning process and the impact of individual differences on learning and a firm foundation in teaching methods. The teacher must continue to build knowledge and skills in all of these areas and to inquire into the teaching-learning process throughout his/her career. For this purpose to be achieved, teacher education is viewed as a systematic and continuous process which involves lively and interactive atmosphere for learning opportunities to change ideas and views; demonstration of innovation and experimentation; and emphasis on learner-centered and activity based joyful learning experiences to enable the teachers not only to acquire the necessary knowledge and skills for adopting a similar approach but also inoculate in them the necessary attitudes and values for applying democratic participatory methodology of teaching.

Moreover, the teacher education is a programme that is related to the development of teacher proficiency and competence that would enable and empower the teacher to meet the requirements of the profession and face the challenges therein. *The NCTE has defined teacher education as- "A programme of education, research and training of persons to teach from pre-primary to higher education level."*

In present circumstances, developments in science and technology have been instrumental in the development of new ideas and technologies and education in general and teacher education in particular is also not an exception to it. Teacher education is also highly influenced by latest technologies at present. The influence of

technologies in different spheres is best explained in following words of our former president Dr. A. P. J. Abdul Kalam, who says,

"***We are today at the convergence of nano, bio and information technologies. This age I feel, will create a historic revolution and we must be in the driver's seat to contribute towards this societal change."***

Hence, it is imperative to continuously update both the initial as well as in-service teacher training. A large number of educational institutions in many parts of the world have exclusively begun introducing the integration of computer technology into teaching. Now a days, many schools are equipped with computers for educating their students, thereby making computers an integral part of educational system. Computer education is necessary because teachers and students will continue to use computer technology in their academic and professional lives.

COMPUTER EDUCATION

Computers are powerful, multifunctional tools that fulfill many roles at all levels of education. Computers are commonly used in education for applications such as communication, distributing education materials, remote learning, performing class work and admissions. In some cases computer use may even be an educational requirement; for instance, some graduate the professional schools require students to have laptop computers. Computers are not only used in accounting, sales and others but also in defence, space and science, because of the contribution of computers in the field of defence and space research in terms of aim saving and accuracy. Computers role is extensively very high in business and commerce as in packing management, stock exchange, insurance etc.

By computer education, we mean, gaining the know-how of the basic concepts related to a computer and gaining the basic knowledge of computer operation. Knowing about the basic components of a computer, the basic concepts behind the use of computers and the know-how of some of the elementary computer applications constitutes computer education. Learning about the computer basics followed by a practical experience of using a computer is the key to computer education. As the computers are widely used today, acquiring computer education is the need of the day. It is the process of acquiring the basic computer knowledge, ideas, skills and other competencies so as to understand the basic terminologies, weaknesses of

computers, potentialities of computers and how computers can be used to solve everyday problems. Computer technology is an integral part of modern life and contemporary education.

Computer education is an independent discipline that may be taught at different levels. Computer helps us to provide not only a good quality of information but also improve skills with practice at all difficulty levels, motivate students towards task, perform experiments, do animation for better understanding. In education all these activities could effectively be conducted through the software technology of CAI (Computer Assisted Instructions).

The children of our schools are born into this time of change and like any other generation cannot see anything strange in what are to use new approaches and fresh solutions, because they have not experienced the old technologies. This implies that curriculum for all people will have to place some emphasis on technological change and its implications. Such a curriculum ensures that all students, no matter what their future hold to use new technology.

Computers find a wide variety of applications in different spheres of life. With an increase in their widespread use and their ever increasing popularity, computer education has become the need of the day. To be in the race, it is very important to take computer education. Computers, which have such a wide variety of applications, are indeed ruling society. To keep up the place in this fast life of today, computer education is extremely important. Computers are an integral part of life and so is computer education. The use of computers and technology in education has changed the learning process of the people in several ways. All school teachers should consider the computer education important because the use of computers is now becoming popular among schools. The teachers have to change with time and should equip themselves with a basic understanding of how to integrate computers into their teaching. The teaching and learning process has been altered by the convergence of a variety of technological, instructional and pedagogical developments in recent times. Technology is challenging the boundaries of the educational structures that have traditionally facilitated learning. Recent advances in computer technology and the diffusion of personal computers, productivity software, multimedia and networked resources over the last decade, heralded the development and implementation of new and innovative teaching strategies. Educators who advocate technology integration in

the learning process believe it will improve learning and better prepare students to effectively participate in the 21st century workplace. Although some teachers are enthusiastic about using computers, others may be more apprehensive. Faculty use of technology is a critical issue in education; administrators and students are expecting faculty instruction to incorporate technology in classroom teaching-learning.

IMPORTANCE OF COMPUTER EDUCATION FOR TEACHERS

Computer education for teachers is what every school needs to do. Computer education for teachers is something that all school teachers should consider because the use of computers is new becoming popular among schools. A large number of institutions in many parts of the world have exclusively begun introducing the integration of computer technology into teaching. The use of technology in teaching can offer a number of benefits. First, it allows teachers to organize their teaching in an efficient manner. With technology, teachers can visualize the abstract concepts and create the real world simulations. They not only help students to understand the topic better, but they can save their time for explaining the abstract matters to students. Second, technology provides teachers with a wide range of sources that are useful for their teaching. Usually, the already available resources can offer more than what may be needed by teachers. Technology can also help teachers develop networks with other teachers from different parts of the world who share similar interests or who have the expertise in certain field. Network building can help teachers solve their teaching problems and, therefore, enhance their professionalism.

Computer technology enhance the initial preparation by giving good teaching and training materials, use of simulators, recording and feedback in teaching. It reduces isolation of teachers, especially for teachers working in special educational needs area by enabling them to access easily with collages, schools, institutions and universities, expertise, rich resources in cyber space etc. Information technology can enhance the quality of teacher education by increasing learner motivation and engagement, by facilitating the acquisition of basic skills and by enhancing teacher training.

Teachers play a significant role in ensuring the successful implementation of technology integration in any educational institutions which invest in technology. The teachers should be enough computers competent so as to use computer and related

technology efficiently with a range of skills. The funding for technology investment will be ineffective if, in operation, teachers cannot optimally use the facility in their teaching.

USES OF COMPUTERS IN TEACHING-LEARNING PROCESS

Computers have some powerful capabilities with regard to information, and those capabilities can provide some powerful benefits for teachers and learners.

Five Fundamental Uses of Computers in Education

1. Enhanced Audio-Visual Presentations

Teachers have always felt a need to supplement their spoken communication with audio-visual materials. This has at different times taken the form of the basic blackboard, overhead transparencies, color slides, etc. Computers can also fulfill this need.

2. New Forms of Communication

Teachers need various ways of communicating during a course. Typically this communication is accomplished by live talking, or through information put on paper. The teacher tells students about assignments "live" or with low-cost, duplicated handouts; students turn in assignments on paper; and students communicate with each other by talking live to the whole class or in small groups. All of this communication can be done via computers. The teacher can put the syllabus and other course assignments on a website that is set up for the exclusive use of students in a particular course. In addition, the teacher and students can communicate with email, and students can communicate electronically with other individual students, with members of a small group, or with the whole class.

3. Access to New Forms of Information

Traditionally students have obtained information about a subject from either lectures or from print materials: books, and journal articles, either purchased or borrowed from the university library. With the advent and explosion of information on the Internet, this has changed dramatically. This is the feature of the so-called Computer Revolution that is changing the way the whole world operates and "does business," literally and metaphorically. Massive amounts of information are being

stored on the Internet, and students (like everyone else) have access to this inforamtion.

4. Pre-Packaged Learning Programs

The most common form of learning in higher education has long been for teachers and students to come together and learn about a subject together. But there have also been "pockets" of instances where students were given materials along with learning instructions, and told to "learn this material on your own." Lab exercises have often been done this way; correspondence courses are another example. Computers now offer a new way of doing this. Like previous efforts of "Learn this on your own," computers can provide short or long exercises in the form of pre-packaged learning programs.

5. Course Management Programs

When teaching a course, there are certain tasks that are somewhat apart from the learning process itself but which are a necessary part of the teaching enterprise: keeping track of who is enrolled, keeping a record of grades achieved or points earned, what materials have been distributed, who has re-written papers and who hasn't, etc. For the most part, teachers have done this with paper and pencil records. But now computer programs have been created that allow this to be done on computers.

COMPUTER COMPETENCE

Competence is often defined as a Combination of awareness, skills and attitude that enables an individual to perform a job to the standard required for successful job performance. In other words, competence deals with “what is expected in the workplace” with the emphasis on performing an actual job and not gaining knowledge or skills for their own sake.

Computer Competence is defined as the knowledge and ability to use computers and related technology efficiently, with a range of skills covering levels from elementary use to programming and advanced problem solving. It is a process whereby a student demonstrates his or her ability to perform college level basic computing work. This process includes the successful completion of a Computer Competence Exam or the completion of a specified computer course. It means being able to use a computer and perform the basic tasks needed to work with computing

efficiently. It is frequently assumed that as computers and Internet access are common-place in the first world, everyone in those countries must have equal and ready access to this technology and to skills in how to effectively use it.

It is considered as a very important skill to possess while in well developed countries. Employers want their workers to have sufficient computer competence levels because their company becomes ever more dependent on computers. Many companies try to use computers to help run their company faster and cheaper. In this case, Computer competence is very much important in corporate level. It is the knowledge that enables a person to understand a computing system and its relationship to business. It is the ability to understand computers and to use them to their best advantage.

At one time or another, most of the people can become very anxious when they contemplate using computers and fear they do not have the knowledge or ability to do so. Lack of computer experience is one of the most obvious reasons for this anxiety.

COMPUTER ANXIETY

Computers are a vital asset in today's business and education world. The emergence of computers and information systems has been perhaps the single biggest factor impacting organizations during the past three decades. Despite the increasing growth of computers, there is evidence that the use of computers by people appears to be limited due to the prevalence of computer anxiety or fear of computers, and negative attitudes towards computers in general.

Computer anxiety, defined by **Raub (1981),** is *"the complex emotional reactions that are evoked in individuals who interpret computers as personally threatening"*. It has also been defined as a fear of computers when using it, or fearing the possibility of using a computer. It is different from negative attitudes towards computer that entail beliefs and feelings about computers rather than one’s emotional reaction towards using computer. Computer anxiety manifests itself in many forms and results in a number of common fears. Users are afraid that they will break the computer or destroy vital information. They feel awkward and fear looking stupid.Computer anxiety refers to negative emotions and cognitions evoked in actual or imaginary interaction with computer-based technology. It has the nature of a trait

that predisposes towards the state of psychological distress in situations that involve encounters with computers.

Computer anxiety has been put into three categories by Gardner et.al. (1989): normal, computer anxious, and phobic. Phobic are identified by acknowledging a combination of reported symptoms including avoiding using a computer, feelings of unreality, fear of losing control, sweaty palms, pounding heart, tightness or pain in the chest, trembling or shaking, shortness of breath, and dizziness or light headedness when faced with a computer. The computer anxious avoid computers when possible and might be uncomfortable in situations requiring their use but rarely report the physical symptoms present in true phobias.

When a person includes the use of a computer into their tasks, they face a host of new opportunities and problems. Unlike a coffee maker or a calculator a computer can make life more complicated rather than making it easier. To the computer anxious person the use of a computer or even the thought of the future use of a computer can cause them to experience feelings associated with anxiety such as fear, embarrassment, disappointment, irritation, and frustration. Individuals who suffer from computer anxiety usually display negative behaviour and physiological reactions to computers. These behaviour reactions include (1) avoidance of computer usage; (2) negative comments about computers; (3) employing extreme care with computers and (4) using the computer for the minimal amount of time. Some of the physiological reactions include sweaty palms, shortness of breath and dizziness. Computer anxiety affects the general usage and the performance of tasks involving the computer.

Elder et al. (1987) Howard and Smith (1986), Igbaria and Chakrabarti (1990) suggest that computer anxiety and stress may cause some individuals to avoid using computers completely. The presence of computer phobic and anxious people in the work-place can lead to other serious performance problems, including sabotage; decline in motivation, work quality, and moral; and increase in mistakes, absenteeism, interpersonal conflicts, and turnover.

Using a computer and internet requires a certain amount of practice and perseverance. As you acquire more and more knowledge of computers along the way you automatically discover how useful using a computer can be in daily life.

REVIEW OF RELATED LITERATURE

Raub (1981) revealed that computer attitudes are gender specific and culturally learned. The repeated measure analysis of variance found that two programming courses (that were given over a semester) reduced computer usage anxiety; however, the courses did not decrease student's fear regarding computer's negative impact on society, nor did they increase student's appreciation of computer technology.

Loyd, Loyd and Gressard (1987) reported that female students had less computer anxiety than male students, and female students liked working with computers more than male students.

Maness (1992) conducted a study with the purpose to establish a national consensus on computer competencies for educators using nationally representative authorities. Among the conclusions reached by the researcher were the following:- i) A dynamic foundation of computer competencies for educators does exist. ii) The body of competencies deemed essential is relatively comprehensive and conveys the expectation of continuing professional development; iii) For educators, the most vital computer competencies are directly related to the instructional process, and apart from the ability to teach, computer competencies are ineffectual.

Aggarwal (1994) found that female teachers had a positive attitude towards computer education and the teachers in central school had more positive attitude than those teachers in public schools.

Chauhan (1997) conducted a study on computer phobia among the teacher trainees. The findings of this study showed that computer phobia exists in the teacher trainees who have opted science stream at graduation level and female teacher trainees have higher positive attitude towards computer as compared to male teacher trainees.

Gardner (1997) in his study reported that more positive attitudes were significantly possessed by those who used technology to prepare lectures, exams, overheads and charts. Also, higher technological use was strongly related to greater computer experience. Finding also revealed a positive relationship between computer experience and computer anxiety.

Hong (1998) reported that there were no significant differences in undergraduates' attitudes toward computers and computer anxiety for male and female undergraduates and their different fields of study. However, low computer anxiety level and high self-efficacy with computer skills were significant predictors of success in computer related courses.

Liu, Macmillan, and Timmons (1998) reported that student's with positive attitudes toward using computers also have positive attitudes toward using computers for their learning.

Chua et al. (1999), Coffin and Mackintyre (2000) in their meta-analysis on the relationship between computer anxiety, computer attitudes, computer self-efficacy and computer experience stated that most findings usually reinforce the gender effects. It was suggested that greater level of computer experience are associated with lower computer experience and more positive computer attitudes.

Mitra and Steffensmeier (2000) concluded that in a networked learning institution where students have easy access to computers could foster positive attitudes toward the use of computers in teaching and learning. They indicated that a computer enriched learning environment was positively correlated with students' attitudes toward computers in general and the role of computers in facilitating teaching and learning.

Shaw and Giacquinta (2000) reported that educational technology students were engaged in using computers more frequently, for a wide array of purposes and for greater number of hours each week than students in the educational administration, business education and higher education programmes. They also reported completing more formal instruction and more positive attitude towards the value of computers in academic studies.

Darakjian (2001) investigated the level of computer anxiety experienced by adult education students and tested a model computer troubleshooting intervention designed to help students to overcome their anxiety about computers. Eighty-two adult education students at Chapman Adult Education Centre in Garden Grove, California, were subjects for the study. Forty three students comprised the experimental group and thirty-nine were in control group. The method used was a pretest-posttest format. Both groups were pre-tested and post-tested using the

Computer Anxiety Rating Scale, Computer Thought Survey and the General Attitudes toward Computers Scale. Analysis of the data indicated that there was no significant difference in degree of computer anxiety between the experimental and control groups prior to the intervention. Finally, the analysis of pretest-posttest scores within the experimental group and analysis between the post-test scores of the experimental and control groups indicated that a significant difference existed in degree of computer anxiety. Results of the study supported the premise that students receiving instruction in basic computer troubleshooting and software applications will show a greater degree of computer anxiety reduction than those students receiving instruction in computer software application only.

Ford, Miller and Mosa (2001) showed gender to be a major predictor of internet use and attitudes. Female students experienced more difficulty in finding information on the internet and felt less competent and comfortable using the internet.

Bigatel (2004) conducted a study to explore exemplary technology using teachers' beliefs and attitudes about teaching and learning and the value of technology use in education while uncovering the process of how these beliefs and attitudes are formed and influenced by many contextual factors in the school culture. Finally, this study described how exemplary technology using teachers' beliefs and attitudes influenced their classroom practices with technology. Exemplary technology using teachers are defined as those who effectively integrate technology into their instructional practices in K-12 educational contexts. Furthermore, this study theorized about the contextual factors that influenced the development and sustainability of teachers' beliefs and attitudes. The findings of this study revealed that the teachers' beliefs and attitudes are consistent with their instructional practices and that supportive and resource-rich learning environments are important factors in the teachers' development and sustainability of effective technology integration practices.

Sharma (2004) reported that senior secondary school students possessed highly favourable attitude towards computer education. The rural and urban secondary school students did not differ significantly in their attitude towards computer education.

Bain (2005) investigated the influence of gender and gender grouping on attitudes, perceptions and use of technology. The implications from this study were that females are using the computer more and have a greater interest in technology.

Kim (2005) conducted a study to identify whether pre-service teachers' perceptions of faculty modelling of computer based technology will have any relationship with pre-service teachers' intent of using computer based technology in educational setting. The analysis showed that except pre-service teachers' major, all the other factors of faculty modelling, gender and age influence their intent to use computer based technology when they become in-service teachers.

Hall (2007) examined the impact of technology resources, school administration and teacher expertise on the relationship between teachers' pedagogical beliefs and different types of classroom computer use. Results showed that teachers with more constructivist beliefs were more likely to use computers more frequently, to use a greater variety of softwares, and to use computers in constructivist oriented ways. Variables, such as staff development, software availability and teacher's expertise had a positive impact on the computer use of all teachers.

Stubbs (2007) conducted a study to investigate variations of two technology integration formats in elementary teacher preparation programs. When participants' overall scores in the two program design groups were compared, the results showed that mean scores in the non-integrated model consistently represented higher readiness on all five areas in the study, though only two were found to be statistically significant. The two areas of significance were: teacher proficiency with technology use and current instructional practices. These findings were counter to the research question. Equally powerful is the finding that program design appears not to impact teacher preparation with respect to incorporating technology into complex thinking tasks, the ability to locate technology based resources and assistance, and perceptions surrounding challenges to embedding technology into teaching.

Gross and Latham (2009) found that undergraduate students were computer information proficient, but their knowledge and information searching skills were insufficient.

Mokhtari, Richard & Gardner (2009) assessed the impact of internet on the reading habits and practices of college students. In the study, 95% of students

reported browsing the internet “every day or almost every day.” The internet was mainly browsed for the purpose of e-mail (90.4%), chatting using internet messaging (63.8%), surfing the web (56.2%), listening to music (52.5%) and conducting research (47.7%). Students reported more enjoyment using the internet than reading or watching television.

Spencer (2010) conducted a study on relationship between teacher attitudes towards software applications and student achievement in fourth and fifth grade classrooms. Results showed that there exists a positive relationship between teacher attitudes towards software and student achievement. However, no relationship was found between teacher attitudes towards creativity software and student achievement as well as between teacher attitudes towards productivity software and student achievement.

NEED AND SIGNIFICANCE OF THE STUDY

The present study will be helpful in knowing the ways and means employed in secondary teacher education institutions to impart computer education to the prospective secondary school teachers for improving their teaching competence and efficiency. Also, the present study will focus on computer use pattern among prospective teachers and teacher educators and try to locate that whether the computers are used by the prospective teachers and teacher educators for academic purposes or for certain other general purposes like e-mail, chatting, playing games etc. On the basis of this, the interest and needs of prospective teachers can be identified and necessary modification in prescribed curriculum of computer education and its transactional processes can be undertaken by the teacher educators and other concerned authorities.

This investigation will study the availability of various physical and human facilities related to computer education in pre-service secondary teacher training institutions. The researcher will try to compare the existing infrastructural facilities with the norms and standards prescribed by different statutory bodies, so that inadequacy in infrastructural facilities related to computer education can be identified and suggestions can be made for improving them in pre-service secondary teacher training institutions.

The researcher will also analyse the existing curriculum of computer education prescribed by Himachal Pradesh University for B.Ed. course. On the basis of this analysis of curriculum, the strengths and weaknesses in its theory part as well as transactional part will be recognised, so that necessary and up-to-date changes in prescribed curriculum can be made. This will help in providing better training to the prospective teachers about potential use of computers in day-to-day classroom teaching-learning process.

The results of the present study will also highlight the teaching-learning strategies employed by computer instructors and teacher educators for imparting computer related training to prospective secondary school teachers. In this regard, an attempt will be made by the researcher to study the appropriateness of such teaching-learning strategies in developing necessary computer competence and efficiency among prospective teachers. On the basis of this, suggestions will be made with regard to other strategies that can be employed effectively for imparting computer education to the prospective teachers.

The present study will be helpful in assessing the level of computer competence and the prevailing level of anxiety among the prospective teachers with regard to use of computers in teaching-learning process. Moreover, the training needs of prospective teachers in the area of computer education will be identified. This will assist in making curriculum of computer education more student-centred as well as need-oriented that will ultimately contribute in enhancing the computer competence and reducing computer anxiety among the prospective teachers.

The study will be beneficial in bringing reforms in the pedagogical aspects of computer education imparted either in secondary teacher training institutions or schools.

In addition to this, the problems related to computer use pattern will be identified in the present study by seeking the views and perceptions of different concerned stakeholders viz. computer instructors, teacher educators and teacher trainees. On the basis of this, suggestions will be laid down for improving the status and standards of computer education in secondary teacher training institutions. This will ultimately result not only in enhancing the quality of teacher education but also raise the standards of school education which is a dire need of the day.

The aforesaid discussion encouraged the investigator to undertake present research study which may be stated as under:-

STATEMENT OF THE PROBLEM

"A Critical Analysis of Computer Education in Pre-Service Secondary Teacher Training Programme"

OBJECTIVES OF THE STUDY

1) To study the availability of different physical facilities for imparting computer related skills in pre-service secondary teacher training institutions in Himachal Pradesh.

2) To identify training needs of prospective secondary school teachers in context of computer education.

3) To perform content analysis of computer education curriculum in pre-service secondary teacher training programme i.e. B.Ed. course prescribed by Himachal Pradesh University, Shimla.

4) To enumerate the teaching strategies being employed by the computer instructors for imparting computer related skills to prospective secondary school teachers.

5) To study the extent of use of computers by teacher educators during teaching-learning process of foundational and pedagogy courses in pre-service secondary teacher training programme.

6) To study computer competence and computer anxiety among prospective secondary school teachers.

7) To study gender-wise and stream-wise differences in computer competence among prospective secondary school teachers.

8) To study gender-wise and stream-wise differences in computer anxiety among prospective secondary school teachers.

9) To draw a pattern of computer use among prospective secondary school teachers.

10) To study the association between gender, stream and preference for each identified computer use by the prospective secondary school teachers.

11) To study the views of prospective teachers regarding computer education in pre-service secondary teacher training programme.

12) To identify the problematic areas related to computer education in pre-service secondary teacher training programme.

13) To lay down suggestions for improving status and functioning of computer education in pre-service secondary teacher training programme.

HYPOTHESES OF THE STUDY

1) There exists no significant gender-wise difference in computer competence among prospective secondary school teachers.

2) There exists no significant stream-wise difference in computer competence among prospective secondary school teachers.

3) There exists no significant gender-wise difference in computer anxiety among prospective secondary school teachers.

4) There exists no significant stream-wise difference in computer anxiety among prospective secondary school teachers.

5) There exist no significant association between gender, stream and preference for each identified computer use by the prospective secondary school teachers.

DELIMITATIONS OF THE STUDY

1) The study will be restricted only to privately managed pre-service secondary teacher training institutions situated in Himachal Pradesh that are offering one year B.Ed. regular course.

2) The teacher trainees of medical and non-medical streams will be combined and named as teacher trainees belonging to science stream. Similarly, the teacher trainees belonging to arts and commerce streams will be considered as a single group (to be named as arts stream teacher trainees.)

3) For studying the teaching strategies employed by the computer instructors for imparting computer related skills, only the views of computer instructors will be taken and no direct classroom observation will be made for the same.

4) For studying the extent of use of computers by teacher educators, only their views will be taken into consideration and no direct classroom observation will be made.

5) The computer anxiety among prospective secondary school teachers will be measured with the help of a standardized tool entitled ‘’COMPUTER PHOBIA SCALE” developed by Rajasekar and Raja (2006).

6) For measuring computer competence among prospective secondary school teachers, a computer competence test will be constructed and standardized by the researcher herself.

OPERATIONAL DEFINITIONS OF THE TERMS USED

1) Critical Analysis

Critical Analysis refers to analysing and evaluating the status of computer education in pre-service secondary teacher training institutions of Himachal Pradesh against the criteria laid down by NCTE/State Govt. of H. P./H. P. University. It is the use of explicit and transparent methods for assessment of evidence (related to computer education) by systematically reviewing its relevance, adequacy and appropriateness in terms of physical infrastructure, human resources, prescribed curriculum and curriculum transaction procedure. It will also encompass studying computer use pattern, training needs, computer competence and computer anxiety among prospective secondary school teachers.

2) Pre-Service Secondary Teacher Training Programme

Pre-Service Secondary teacher training programme refers to one year B.Ed. regular course imparted for preparing prospective teachers in NCTE recognised teacher training institutions affiliated to Himachal Pradesh University, Shimla.

3) Physical Facilities for Computer Education

It includes following aspects:

1. Computer laboratory with adequate furniture and instructional space for prospective teachers.
2. Number of computer systems in computer laboratory.
3. Configuration of computer systems.

4. Softwares in computer systems.
5. Power backup facility.
6. Printer.
7. Scanner.
8. Speakers.
9. Audio recording devices.
10. LAN facility.
11. Internet facility.
12. Annual maintenance contract.
13. Computer instructor and his/her educational/professional qualifications.
14. Laboratory Attendant/Technical Assistant.

4) Computer Competence

Computer competence refers to the knowledge about computers, awareness regarding uses of computers in different fields. It will be measured by computer competence test to be constructed and standardized by the researcher herself.

5) Computer Anxiety

Computer anxiety refers to negative emotions and the complex emotional reactions that are evoked in individuals who interpret computers as personally threatening. It is a fear of computers when using it, or fearing the possibility of using a computer. It will be measured by Computer Phobia Scale developed by Rajasekar and Raja (2006).

6) Computer Use Pattern

It includes the range of purposes for which the computers are employed by prospective secondary school teachers that may vary from personal use (for entertainment) to professional use (for educational/academic purposes) and encompass chatting, e-mail, carrying out academic work, downloading songs and movies, video conferencing, making assignments, preparing power-point presentations, downloading reading materials, online shopping and trip/travel management, vocational planning etc.

RESEARCH METHODOLOGY

"Survey technique" under descriptive method of research will be the sole basis for conducting present investigation.

In the present study, both qualitative and quantitative research approaches will be employed for realizing the objectives.

SAMPLING

In the present investigation, the researcher will select five districts out of ten districts (except Kinnaur and Lahaul-Spiti) of Himachal Pradesh through random sampling procedure. The district Lahaul-Spiti has no B.Ed. College and district Kinnaur has only one B.Ed. College. Hence, these two districts will not be taken in universe for sampling. From the sampled five districts, thirty five to forty B.Ed. colleges will be selected by employing random sampling technique.

Further, all the computer instructors working in the sampled colleges will be selected for ascertaining their views regarding various aspects of computer education.

The teacher educators of the selected pre-service secondary teacher training institutions will be sampled by incidental sampling technique and all teacher educators willing to supply the requisite information will be taken into consideration in the present investigation.

The prospective teachers studying in B.Ed. course in pre-service secondary teacher training institutions will be selected by adopting stratified random sampling technique with proportional allocation. Firstly, the researcher will divide the population of prospective teachers in one institution into four strata on the basis of their gender and academic streams (Arts and Science) and then select 30% sample with proportional allocation from each of four stratum by employing random sampling technique. On an average, the researcher will try to include atleast 700 prospective teachers from selected pre-service secondary teacher training institutions.

RESEARCH TOOLS TO BE DEVELOPED

Following research tools will be developed by the investigator herself:

1) Check List.

2) Questionnaire for Computer Instructors.

3) Schedule for Teacher Educators.

4) Training Needs Assessment Questionnaire for Prospective Teachers.

5) Computer competence test.

The purpose of the study will be to look into various aspects of computer usage and its role in professional development of prospective teachers. For this purpose, the views will be sought from computer instructors, teacher educators and prospective teachers of pre-service secondary teacher training institutions by developing separate questionnaires which will be structured in nature. The details of different research tools are as under:-

1) Check List

A check list will be prepared to determine the status of computer education and available physical and human facilities in secondary teacher training institutions. A check list is a simple device consisting of a prepared list of items which are thought by the researcher to be relevant to the problem being studied. To determine the status of facilities for computer education in pre-service secondary teacher training institutions, a check list will be developed by the investigator which will be comprised of both type of items i.e. Yes/No type items indicating presence/availability of particular facility and open-ended type items indicating the quantity of a particular available facility for computer education in the institutions.

2) Questionnaire for Computer Instructors

For seeking the views of computer instructors regarding role of computer education in preparing future teachers, a questionnaire will be developed by the investigator herself. The items in this questionnaire will be both close-ended and open-ended in nature. The questionnaire will mainly concentrate on:

a) Views related to importance of computer education for prospective secondary school teachers.

b) Views regarding availability of physical facilities and their adequacy as well as appropriateness.

c) Views related to curriculum prescribed for computer education in B.Ed. course.

d) Views regarding teaching strategies being employed by computer instructors for imparting computer education.

e) Problems faced by computer instructors in imparting computer education to prospective secondary school teachers.

f) Suggestions to improve the standards of computer education and its contribution in preparing future teachers.

3) Schedule for Teacher Educators

In order to seek the views of teacher educators regarding the role and importance of computers in transaction of curriculum in various school subjects, the researcher will develop a schedule herself. The schedule will be structured in nature consisting of both close-ended and open-ended questions. The structure of schedule will mainly be oriented around following issues:

a) Views regarding need of computer education for teacher educators and prospective secondary school teachers.

b) Views related to curriculum prescribed for computer education in B.Ed. course.

c) Views related to extent of use of computers and teaching strategies employed by teacher educators in teaching-learning process of various foundation and pedagogy courses of B.Ed. programme.

d) Problems faced by teacher educators in use of computers during teaching- learning process of foundational and pedagogy courses.

e) Suggestions to improve computer education in pre-service secondary teacher training institutions.

4) Training Needs Assessment Questionnaire for Prospective Secondary School Teachers

In order to study the views of prospective secondary school teachers with regard to status of computer education in pre-service secondary teacher training institutions along with the training needs of prospective teachers, a structured questionnaire comprising of both close-ended and open-ended type questions will be developed. The questionnaire will mainly focus on:

a) Views regarding availability of physical facilities related to computer education and their adequacy.

b) Views related to curriculum prescribed for computer education in B.Ed. course.

c) Views related to use of computers in teaching-learning process of different school subjects by prospective secondary school teachers.

d) Views regarding the appropriateness of teaching strategies being employed by computer instructors in imparting computer education.

e) Computer use pattern among prospective secondary school teachers.

f) Training needs of prospective teachers in context of computer education and teaching-learning process in schools.

g) Problems faced by prospective teachers in context of computer education imparted in pre-service secondary teacher training institutions.

h) Suggestions to improve the standards of computer education in pre-service secondary teacher training programme.

5) Computer Competence Test

A test will be developed by the researcher herself for measuring the computer competence level of prospective teachers. This test will be divided into two parts. First part of the test will mainly deal with the questions related to knowledge about computers and their application/use in different fields including teaching-learning process. These two parts will be;

1) Knowledge (simple knowledge/literacy) about computers.

2) Awareness (understanding and simple application) regarding uses of computers in different fields.

The second part of the test will mainly deal with computer related self-efficacy among prospective teachers which will be ascertained through their self-perception or beliefs about own competence and skills in use of computers specifically for educational purposes including teaching-learning process.

The test will be developed by employing following steps:

1) Creation of item pool.(Preliminary draft)
2) Revision and Editing of test items by seeking expert opinion.
3) Carrying out Item Analysis of preliminary draft of computer competence test.
4) Estimating Reliability of final draft of computer competence test.
5) Ascertaining Validity of computer competence test.

RESEARCH TOOL TO BE USED

Computer Phobia Scale: For measuring computer anxiety among prospective teachers, Computer Phobia scale by S. Rajasekar and P.Vaiyapuri Raja(2006) will be used.

It measures phobia or anxiety towards various aspects of computers including computer use. The Computer Phobia Scale is comprised of 29 statements of which 8 are positive statements (1,9,16,18,21,24,26,29)and remaining 21 are negative statements. All the 29 items are grouped under three dimensions:- 1) Personal failure-anxiety about present or future interaction with computers or computer related technology. 2) Human versus machine ambiguity- negative global attitudes about computers, their operations or their societal impact; and 3) convenience- specific negative sentiments or self-critical dialogues design, actual computer interactions or when contemplating future computer interaction. The coefficient of reliability for this scale was found to be 0.88 and intrinsic validity has been reported to be 0.94. Thus, from the two coefficients, it may be inferred that this scale is highly reliable and valid.

In this scale, each statement is set against five points i.e. “Strongly agree”, “Agree”, “Undecided”, “Disagree”, “Strongly disagree” and weight of 4,3,2,1 and 0 are given respectively for positive statements and the scoring is completely reversed for the negative statements. The maximum possible score can be 116 and minimum can be zero. Lower score indicates the presence of more computer phobia or anxiety. The details about other characteristics, application and norms are given in the manual of the scale.

PROCEDURE FOR DATA COLLECTION

For collecting the data, the investigator will personally visit the selected pre-service secondary teacher training institutions. The tools will be administered to the selected sample of computer instructors, teacher educators and prospective teachers with prior permission of head of institutions.

First of all, the check list will be filled by the researcher with the help of computer instructors through cross verification from stock registers of computer laboratory and by personal observation of available infrastructural facilities. The questionnaires will got filled from the computer instructors on an individual basis.

The schedule meant for teacher educators will also be filled on an individual basis. Further, the information from the prospective secondary school teachers will be collected by administering questionnaire, computer phobia scale, and computer competence test on group basis.

Before getting completed tools from computer instructors, teacher educators and prospective teachers, a proper rapport will be established with them and all of them will be requested to give requisite information on each item in the tools. All of them will be assured that the information furnished by them will be kept strictly confidential and will not be shown even to the managing committee members and principals of the colleges.

ANALYSIS OF DATA

For achieving the objectives of the present study, the data will be analysed by employing following techniques:-

For studying the status of various physical and human facilities for computer education in pre-service secondary teacher training institutions, the check list will be filled up from computer instructors and verification of the same will be done through stock registers of respective pre-service secondary teacher training institutions. The data so obtained will be analysed by using frequency count and percentage analysis.

The curriculum of computer education prescribed for B.Ed. course in pre-service secondary teacher training institutions will be analysed on the basis of the views of all stakeholders by employing content analysis technique.

The data obtained from computer instructors, teacher educators and teacher trainees related to various aspects of computer education like teaching strategies employed, use of computer by teacher educators, training needs of prospective

secondary school teachers, computer use pattern among prospective secondary school teachers etc. will be analysed by employing content analysis technique along with frequency count and percentage analysis.

In order to study computer competence and computer anxiety among prospective secondary school teachers, percentage analysis will be employed. Further, for studying gender-wise and stream-wise differences in computer competence and computer anxiety among prospective teachers, the statistical technique of t-test will be applied. For studying the association between gender, stream and preference for each computer use by the prospective teachers, contingency coefficient will be computed.

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